



*Light pollution emitted from southern New England as viewed from a satellite.
Image: NASA*

Responsible Outdoor Lighting

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Key issue: Light Pollution

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Stewardship Opportunity:

Reduce carbon emissions, save money, care for the web of life at night.

Light pollution - *the human-made alteration of outdoor light levels from those occurring naturally at night* – can be as irritating as noise pollution is for neighbors!

It has been accelerating since the advent of electrical lighting 150 years ago, and, worldwide, increased at an alarming 10% per year from 2011 to 2022 according to [an authoritative study published in 2023](#). Since LED fixtures and bulbs reduce energy use compared with older technologies, they are so inexpensive to operate that the temptation is to increase outdoor lighting without thinking through the consequences. LEDs have also introduced a new problem: [too much light in the blue end of the light spectrum](#). Blue light scatters in the atmosphere much more than other colors of the spectrum and, for most people, feels harsh at night and is blinding. It also has more negative impacts on wildlife than warmer colors.

Houses of Worship (HOWs) started lighting steeples and bell towers in the 1950s as local landmark-lighting or to communicate the idea of a beacon. Like many other businesses, they light up signs and have also installed parking lot lighting for evening activity safety reasons. And many times, fear of break-ins has drawn them into using “security lighting” left on all night long. Unfortunately, poorly designed parking lot and security lighting, and the uplighting of architectural features and façades, often causes conflict with residential neighbors. It also has negative impacts on human health and safety, our environment and even our spirituality.

Stewardship Opportunity Solutions: Responsible outdoor lighting seeks to meet the needs of people to see at night while conserving energy, avoiding harmful effects on humans and wildlife, and protecting our night sky.

The [Five Principles for Responsible Outdoor Lighting](#) have been developed by DarkSky International and the Illuminating Engineering Society (IES). Outdoor lighting should be:

- **Useful:** have a clear purpose.
- **Targeted:** directed downward using shielding so the light emitted falls only into the space where it is needed.
- **Low Level:** use the lowest amount of light that meets the purpose.
- **Controlled:** use timers, motion detectors and dimmers.
- **Warm color temperature:** An LED rating of 1800-2700K is much less detrimental due to lowered blue-spectral content.

By applying the five principles to our houses of worship, we can set an example to the community - our religious one and the larger ones around us.

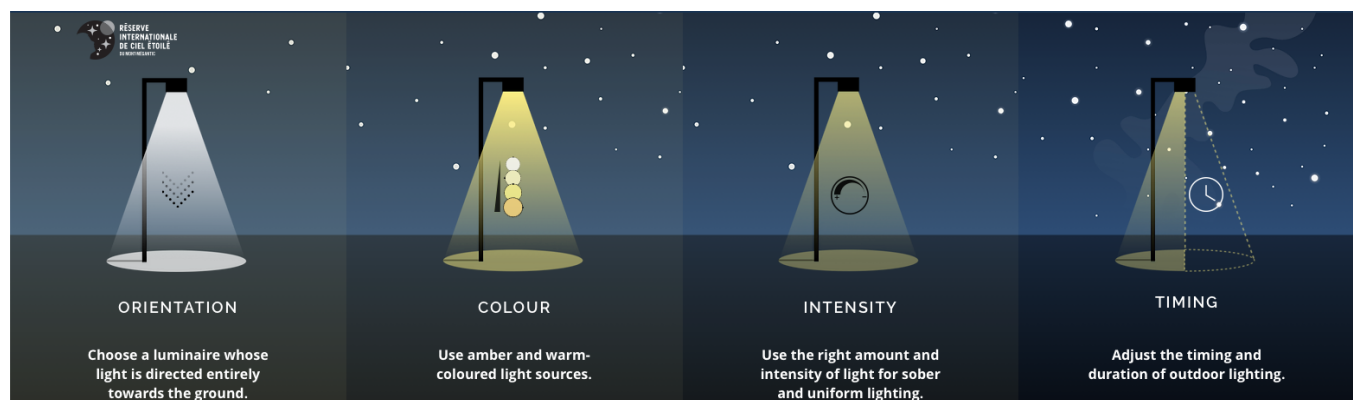


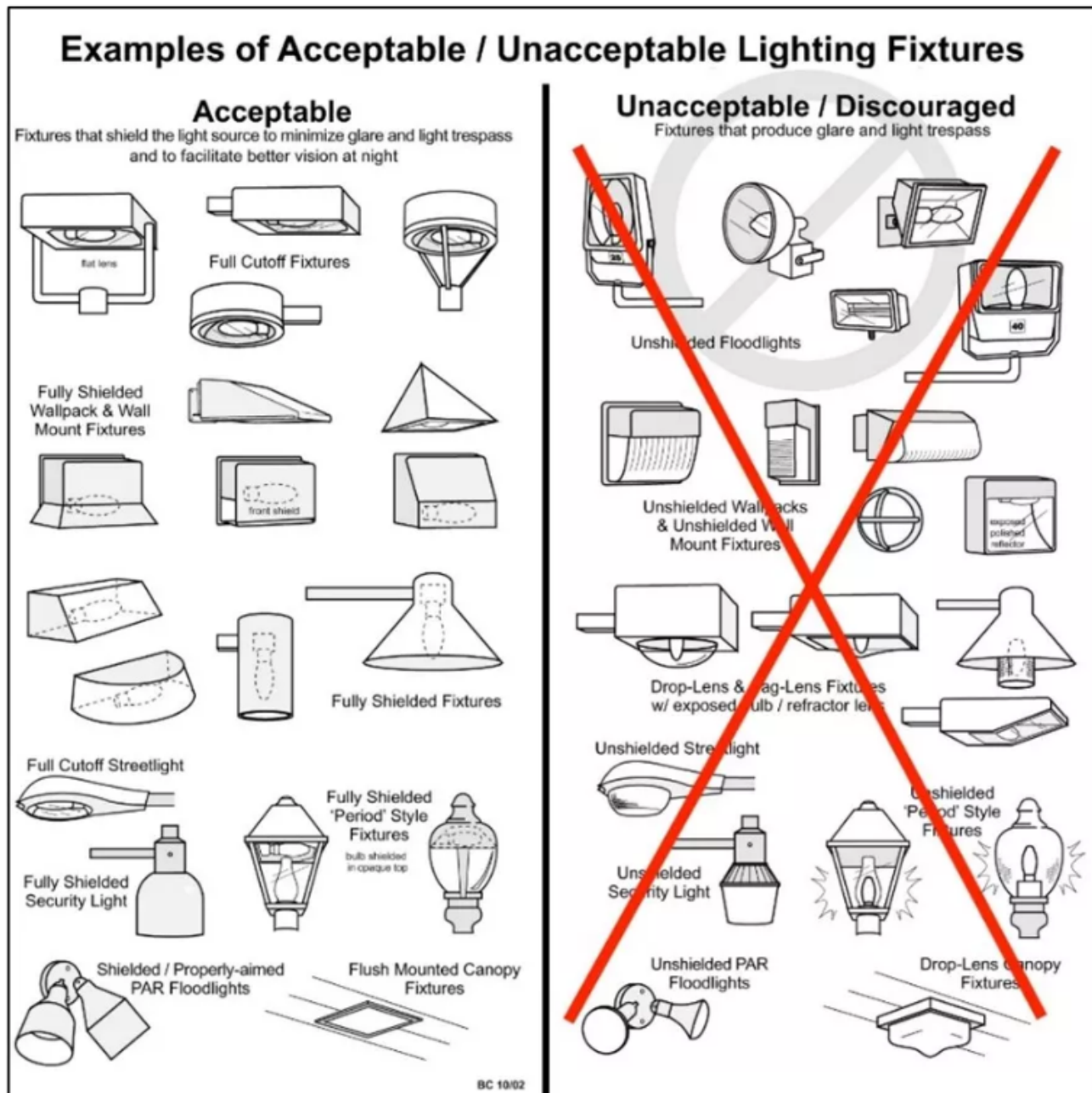
Image credit: Mont Mégantic Observatory, QC

Often, cities and towns in Massachusetts have lighting ordinances, general by-laws, zoning by-laws or both, which somewhat reflect these sensible guidelines. To see if yours does and what it entails, see the [DarkSky Mass webpage on ordinances](#).

Application: How to find dark sky compliant fixtures and bulbs

With the basic principles outlined above, the next question is finding lighting that adheres to them.

Fixtures: DarkSky International has a light fixture certification process resulting in a [searchable online database](#). The graphic on the next page contrasts some examples of compliant and non-compliant lighting.



Source: James Lowenthal: Light Pollution (smith.edu)

Light sources: Once a HOW has chosen a compliant fixture, attention must then be paid to the [brightness](#) and [color temperature](#) of the light source itself.

Brightness, or intensity, is measured in lumens. Use the fewest lumens that do the job. A shielded fixture will require a bulb rated about 50% lower in lumens for the same amount of light hitting the ground than needed in an unshielded fixture. See this [DarkSky Mass web page](#) for recommendations on brightness levels for different situations.

Newer lighting fixtures with a built-in bulb often have an adjustable light color temperature. Use the warmest color (that is, lowest temperature) setting, being sure 2700K or less is available. “Amber” implies 1800-2200K and is similar to the bug lights of the past.

If the fixture is designed for a replaceable bulb, carefully read the label on the bulb package to choose one which is 2700K or less in color temperature and of appropriate brightness for the task.

Controls: Motion detectors, timers and/or dimmers are electronic devices that can minimize outdoor light usage to only the time and the intensity needed. Some bulbs have motion detectors built into them. Timers and dimmers are usually integrated into a switch or a control system.

Before and After Example – St Patrick’s Church, Newport, Co. Mayo, Ireland:



Photo credits: Georgia MacMillan & Michael McLoughlin

Resources:

DarkSky Massachusetts: darksnymass.org

DarkSky International: www.darksny.org

www.lightpollutionmap.info (VIIRS) (zoom in on your town or city’s light pollution in different years)

www.lightjustice.org (based in Cambridge, MA, addresses light pollution in environmental/social justice communities)

globeatnight.org (citizen scientist night sky observations)

[*The End of Night*](#) – Paul Bogard (chapter 4 concerns the spirituality of the night sky)

[*The Darkness Manifesto*](#) - Johan Eklof (example of steeple lighting negatively impacting Creation)

[*Learning to Walk in the Dark*](#) - Barbara Brown Taylor (spirituality of darkness)